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ABSTRACT

Despite the costs of implementing technology at community colleges, the benefits gained include increased instructor creativity, increased student interest and learning, and greater flexibility of instructional delivery. Instructional technology may be implemented in two ways: first, the use of technology as a simple add-on to enhance current instructional methods by integrating text material with sound, photos, full-motion video, and graphics; and second, the use of technology to transform both the teaching and learning function by providing students with access to multimedia computers stations equipped allowing them to work on course content at their own pace. Due to the high costs of system maintenance and training and the potential redefinition of the role of faculty in the educational process, colleges should try to find the right balance of technology-based and faculty-based instruction. Although new technology may provide access to more individuals to instruction or communication, it may also create more disadvantages for those students in economically depressed areas and those who have never been exposed to computer technology prior to entering college. Innovative solutions to the issues presented by the adoption of new technologies include the creation of committees to oversee technology spending and instituting a student technology fee to cover costs associated with continual upgrading. (TGI)

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Technology in Community Colleges

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Digest

June 1996 EDO-JC-96-10

Technology in Community Colleges

by Kristen McKinney

Computers, sophisticated software, e-mail, and Internet access are the new tools of business and education in an evolving post-industrial society where information truly is power. Those who have access to these new technologies have opportunities to compete in an aggressive marketplace. Information technologies permeate virtually every field, and skill in using them is essential.

Community colleges are making efforts to keep up with the rapidly changing technology, but the costs are substantial. This digest will discuss some of the benefits gained from implementing technology in community colleges, such as increased instructor creativity, increased student interest and learning, and greater flexibility of instructional delivery. The monetary costs of implementation will be addressed as well as the potential negative effects in areas such as access, and the role of faculty in the information classroom. Finally, some potential solutions to these problems will be presented.

Benefits of Instructional Technology

Doucette (1994) describes two ways technology is being implemented. The first type of implementation is the use of technology as a simple add-on to enhance current instructional methods. With multimedia technology, instructors can create attention-catching lectures and can also generate plans which allow them to change format based on student understanding and interest (Miketta & Ludford, 1995). Use of computer technology to integrate text material with sound, photos, full motion video, and graphics can allow the instructor creativity and freedom in lecture presentation, and engage students in the learning process.

The second type of implementation described by Doucette (1994) is the more complex process of using technology to transform both the teaching and learning functions. Systems that provide students with access to a multimedia computer station equipped with programs of course content allow them to work at their own pace. Students can focus on individual areas of weakness because the course content comes from computer disks rather than formal lectures. One instructor claimed that such technology revolutionized his teaching because the computer presentation of subject matter freed him to interact with individual students, diagnose their problems, and tailor his style of instruction to each (Scheponik, 1995). Additional benefits include immediate feedback to the student (Brutchin et al., 1994), better accommodation of student learning styles (Doucette, 1994), improved retention and understanding of the material (Miketta & Ludford, 1995), increased levels of student participation and interest, and more opportunities for team learning (Scheponik, 1995).

Using computer based technology in a lab-type setting provides flexibility in instructional delivery for students who have difficult schedules. The Flex Lab at Santa Fe Community College offers courses which are accessed by computer so that students can work on assignments at their own pace in a relaxed, non-competitive learning environment (Ortego & Richards, 1995). The lab is staffed by trained personnel who can answer questions and provide guidance to the students. Lab type instructional programming can also increase a college's potential to provide distance education if programs can be accessed through the Internet.

Limitations of Technology

Because computer technology is rapidly changing, one of its most fundamental features is that nothing remains up-to-date for any substantial length of time. Jacobs (1995) outlined the costs of system maintenance for the Maricopa County Community College District (MCCCD). He estimated the following computer replacement and upgrade costs:

- Computers become obsolete approximately six years after purchase, and are replaced at an average cost of $2,500.
- Computers generally need to be upgraded after three years to maintain their usefulness, at an average cost of $300.
- If the number of students, staff, or faculty increases, additional systems must be added to accommodate them.

The costs of computers and other technological supplies are substantial, and they do not include the costs of training personnel how to use the technology.

Unfortunately most colleges cannot hope to support these technologies under their current budgetary constraints. Technology as an add-on is not economically feasible. Some individuals contend that if changes are made to the curriculum and teaching methods, colleges will be able to financially support the restructured curricula which utilizes the current technology. In many cases this means redefining the role of faculty in the educational process and thinning it out. Doucette (1994) describes the new faculty as one which remains in control of course content, design, standards and assessment. The students interact with computers to access these instructional materials while faculty and other trained technicians use their expertise to assist those having difficulty.

Restructuring efforts raise many concerns for both faculty and students. Many faculty members are alarmed that they may be replaced by new technologies, because they see that educational institutions cannot economically support both a full complement of faculty and a technologically current curriculum. However, current research indicates that technology is most successful when used alongside a knowledgeable instructor. As Scheponik (1995) aptly illustrates in his account of the multimedia classroom, although an instructor's role may change in light of new innovations to one more focused on giving individual guidance than large lectures, he or she is no less indispensable. This poses challenges for colleges in trying to find the right balance of technology and face to face instruction.

Access

The issue of access to technology is a double edged sword. In many ways the additional flexibility gained with computer based instructional delivery creates a situation where more individuals can access it. New methods of communication such as e-mail allow students who are less likely to become involved in class discussion, such as women and minorities, to communicate more privately with instructors rather than having to speak out in class (Gilbert, 1995). Unfortunately, although traditionally under represented groups may experience equality through technology in some ways, it may also serve to create a greater division, a new class distinction between the techno-rich and the techno-poor.

Students who live in economically depressed areas (many of whom are under represented students) may not have access to technology because the colleges in their area may be financially unable to keep up with the costs (Gilbert, 1996). Thus the schools in more affluent areas provide technology for their students while the poorer areas suffer, widening the gap between the technology rich and poor. Also, students who access the technology through distance education programs cannot benefit from the on-site personnel who assist those fortunate enough to be in the lab. Finally, students who have never been exposed to computer technology may be put at a disadvantage when entering a college program that relies heavily on the use and knowledge of computers.

Innovative Solutions

MCCCD has dealt with technological issues by creating a committee system in which each committee researches an area of technological development and reports on whether and how the new innovations can be instituted to benefit their colleges. For example, the Emerging Technologies Committee examines how newly developed software, hardware, and other technologies can be utilized to improve the quality of instruction and learning (Harper-Marinick, and others, 1994). Committees and roundtable discussion groups allow the college to take a careful approach to implementation of technology. Although these networks do not in themselves solve budgetary problems, they help colleges determine where money can be best spent, avoiding wasteful spending on useless technology.

A proposed solution to the economic burden is to institute a student technology fee that would cost between $25-150 per student per year. These fees would offset the costs of continual upgrading (Gilbert, 1996). Unfortunately, this additional money often cannot support the large technological transformations which many colleges desire, and adding fees to the already high costs of education may drive the price out of reach for many individuals.

Conclusion

It is obvious that technology is rapidly changing the ways that people conduct business and provide educational opportunities. Students and faculty must try to remain abreast of the technology in order to maintain their competitiveness in the job market. If community colleges fail to provide the opportunity to learn these skills they risk a decrease in student enrollment as students seek colleges better able to accommodate them. As computer technology becomes ensconced in our culture, it behooves colleges to consider the costs and benefits of providing access to technology and to budget accordingly so that they can continue to provide necessary services to students.

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